



Memorandum

To: Eric Blischke and Chip Humphrey, EPA Region 10
From: Lower Willamette Group
CC:
Date: October 30, 2008
Re: Criteria for Identifying Reference Sediment Samples

The LWG has applied criteria for identifying reference sediment samples for Portland Harbor. The criteria are generally as described in MacDonald & Landrum's Preliminary Draft *Evaluation of the Approach for Assessing Risk to the Benthic Invertebrate Community at the Portland Harbor Superfund Site*. The specific criteria applied are as follows:

Whole Sediment Chemistry

1. All measured metals, PAHs, DDTs and PCBs occur at concentrations below conservative SQGs. The conservative SQGs used for this screen are the RSET SL1 Freshwater SQGs, presented in Table 7-1 of the Interim Final Northwest Sediment Evaluation Framework (RSET 2006).
2. Mean PEC-Q_{DW} ≤ 0.1¹
3. ΣESB-TU_{PAHs} < 0.1
4. The (ΣSEM-AVS)/f_{oc} criterion was not applied because sediment SEM and AVS data have not been collected for the Portland Harbor RI/FS.
5. Total ammonia concentration < 115 mg/kg_{DW}. This is the DMMP (USACE *et al.* 2008) bulk ammonia no effects threshold for the Neanthes 20-day chronic test. The bulk sediment threshold was used in place of MacDonald and Landrum's pore water criteria because pore water ammonia and hydrogen sulfide concentrations were not measured.

Whole Sediment Toxicity

6. Met RSET freshwater performance standards for reference sediment as presented in Table 8-1 of the Interim Final Northwest Sediment Evaluation Framework (RSET 2006):
 - a. *Hyalella* 28-day survival and growth test
 - i. Survival > 70 %
 - ii. Growth ≥ 0.15 mg/individual

¹ Rounded to one significant figure.

- b. *Chironomus* 10-day growth and survival test
 - i. Survival $\geq 70\%$
 - ii. Growth $\geq 80\%$ of final control growth

References

RSET. 2006. Regional sediment evaluation framework for the Pacific Northwest. Interim final. September 2006. Regional Sediment Evaluation Team (US Army Corps of Engineers - Seattle District, Portland District, Walla Walla District, and Northwestern Division; US Environmental Protection Agency Region 10; Washington Department of Ecology; Washington Department of Natural Resources; Oregon Department of Environmental Quality; Idaho Department of Environmental Quality; National Marine Fisheries Service; US Fish and Wildlife Service).

USACE, EPA, WDNR, Ecology. 2008. Dredged material evaluation and disposal procedures (user's manual). July 2008. Dredged Material Management Program: US Army Corps of Engineers, Seattle District, Seattle, WA; US Environmental Protection Agency, Region 10, Seattle, WA; Washington State Department of Natural Resources; and Washington State Department of Ecology, Olympia, WA.